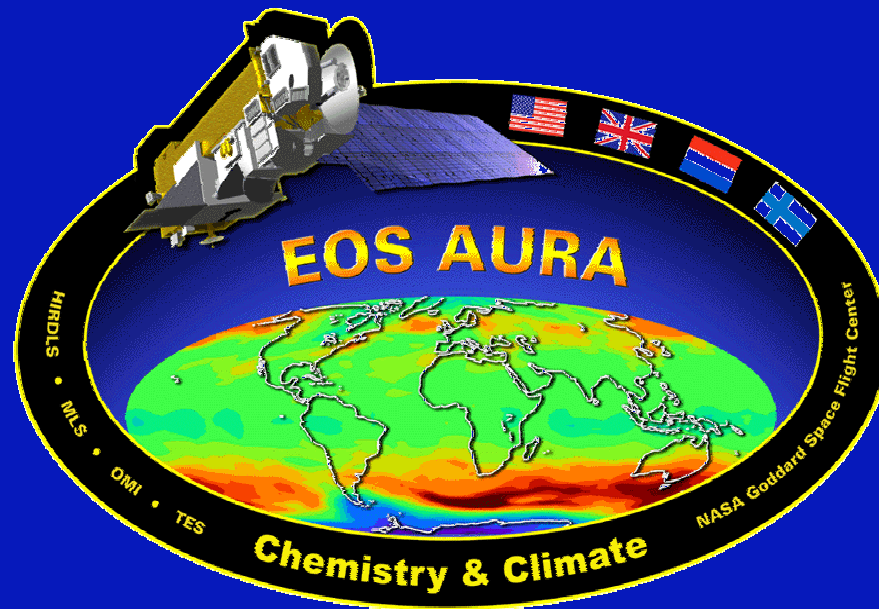


TC4 Validation Mission

July-August 2009



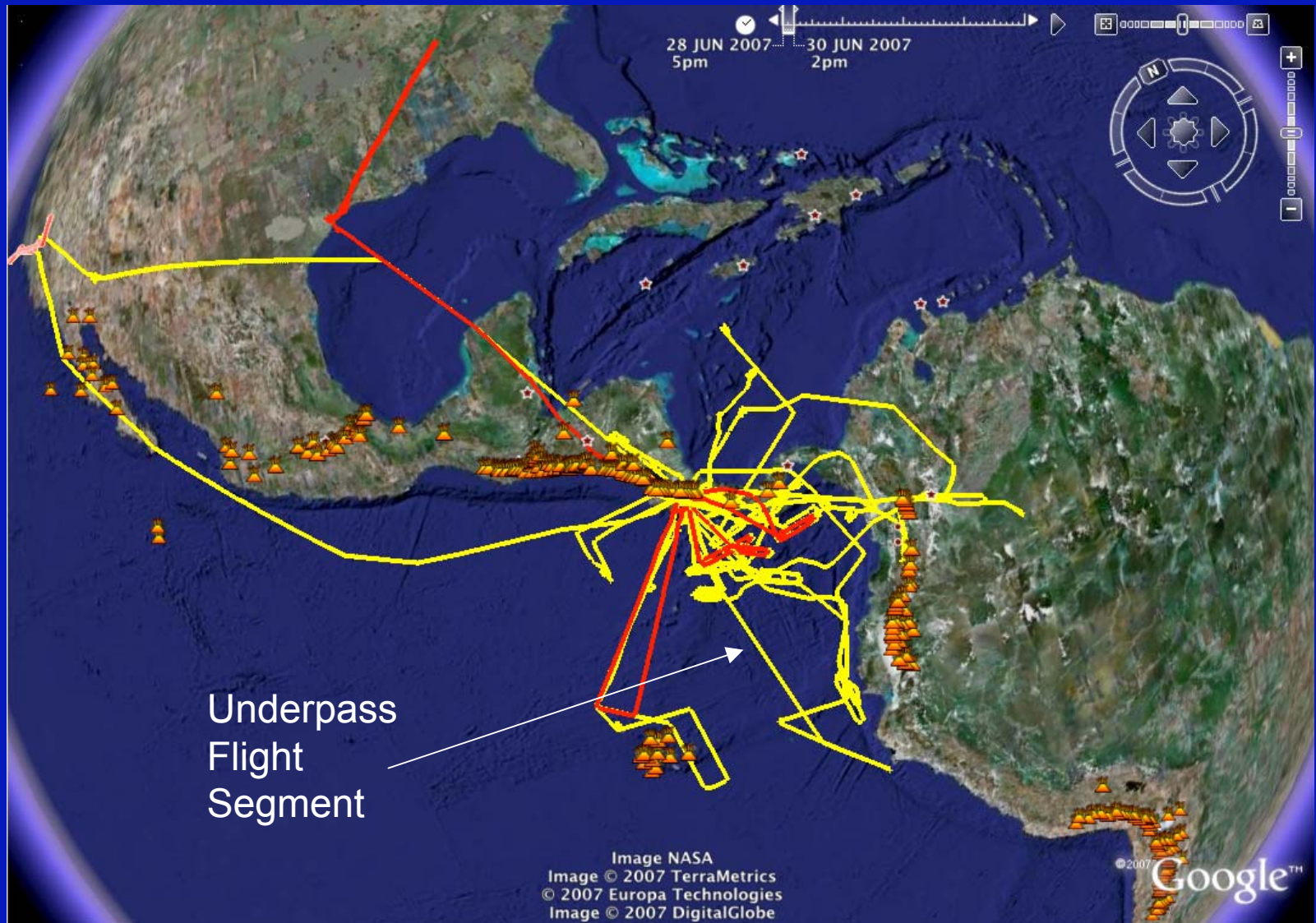
TC4

- Mission consisted of 3 aircraft
 - ER2 - mostly full participation - but landed before Aura overpass
 - DC8 - mostly full participation - bulk of Aura validation
 - WB57 - Participated in only 3 San Jose flights near the end of the mission - landed before overpass.

DC-8 Payload

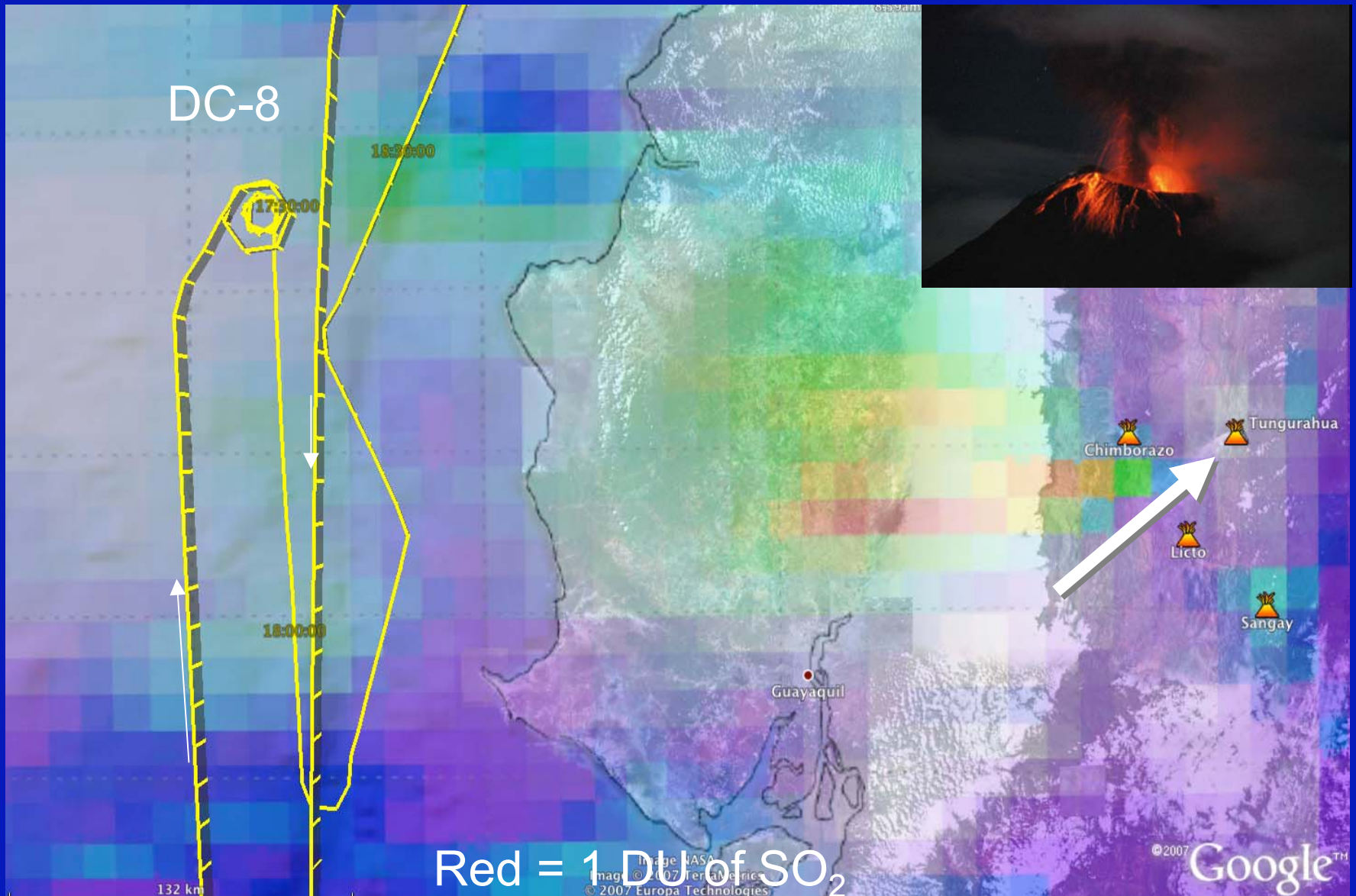
Measurement	Instrument Name	PI
H ₂ O, CO, CH ₄ , N ₂ O	DLH, DACOM	G. Diskin, G. Sachsse, LaRC
Cloud Part.	2DS, CPI	P. Lawson, SPEC Inc.
Aerosols	LARGE	B. Anderson, LaRC
Aerosol Comp.	PALMS	D. Murphy
Cloud Part.	RICE, SID2, PIP, CVI	A. Heymsfield, NCAR
SO ₂ , Organic Acids	CIMS	J. Crounse, CalTech
Ozone	FASTOZ	M. Avery, LaRC
CO ₂	MACDONNA	S. Vey, LaRC
NO-NO ₂	TD-LIF	R. Cohen, UC Berkley
Many gases	WAS	D. Blake, UC Irvine
HNO ₃ , SO ₂ , aerosol sulfate	SAGA	J. Dibb, U. NH
Drop T, humid, winds	Dropsondes	M. Kurylo, HQ
Winds, T	MMS	P. Bui, ARC
Precip Radar	APR2	E. Smith, GSFC
O ₃ /Aerosol Lidar	DIAL	E. Browell, LaRC
H ₂ O/Aerosol Lidar	LASE	E. Browell
Broadband radiom.	BBIR	A. Bucholtz
Actinic Flux	CAFS	R. Shetter, NCAR
Solar Spec. Fluc	SSFR	P. Pilewske

DC-8 and WB-57 Flights



<http://code613-3.gsfc.nasa.gov/People/Lait/met/tc4/kml/flights/>

July 17 - SO₂ Plume Sample



TC4

Clouds and Volcanic Outflow

Flight 5

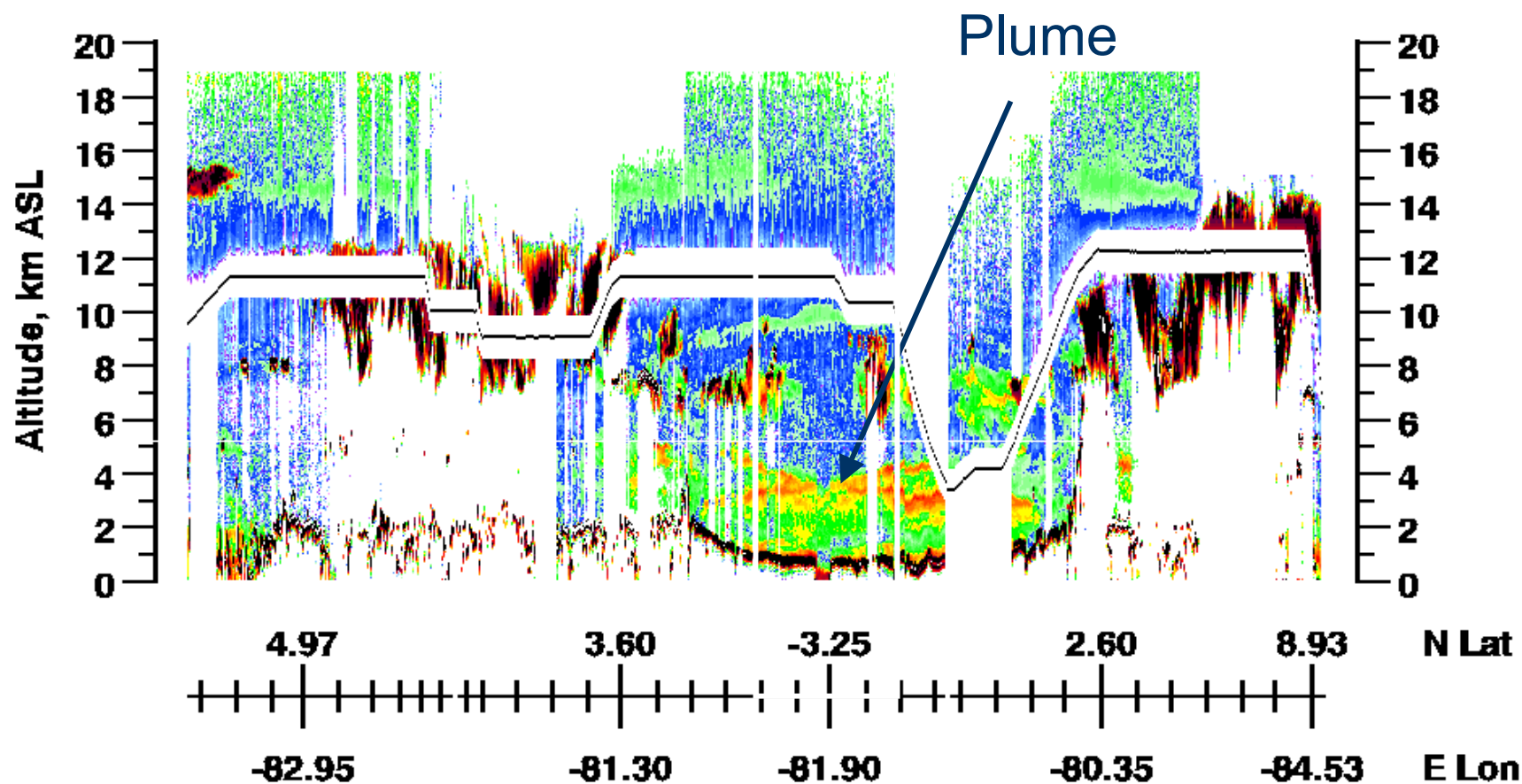
17 Jul 07

Aerosol Scattering Ratio (1064 nm)

0.01 0.1 1 5 10 50



14:00 16:00 17:00 19:00 20:00 UT



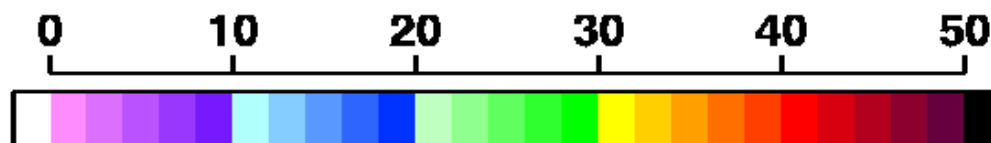
TC4

Clouds and Volcanic Outflow

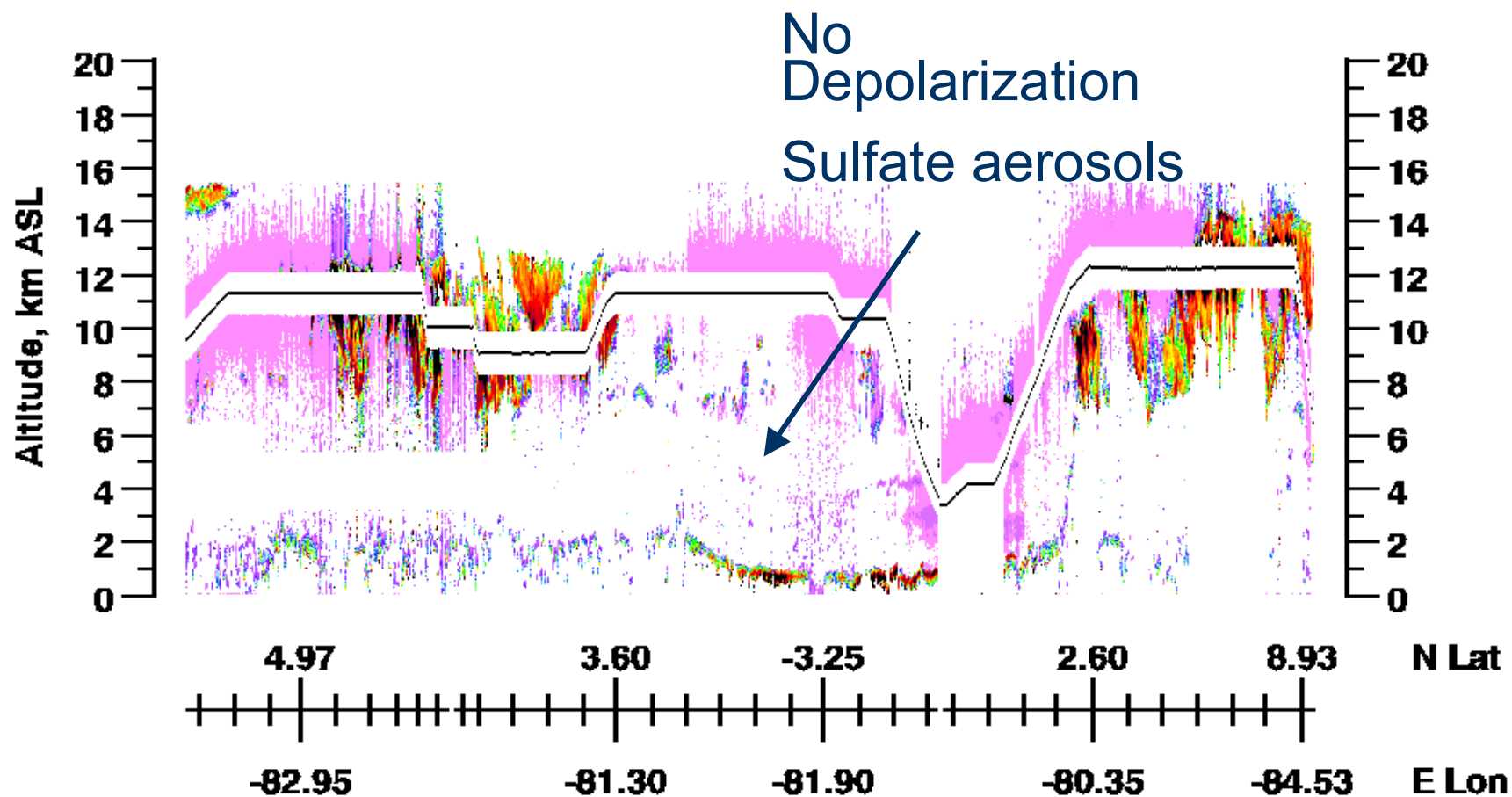
Flight 5

17 Jul 07

Total Depolarization %



14:00 16:00 17:00 19:00 20:00 UT



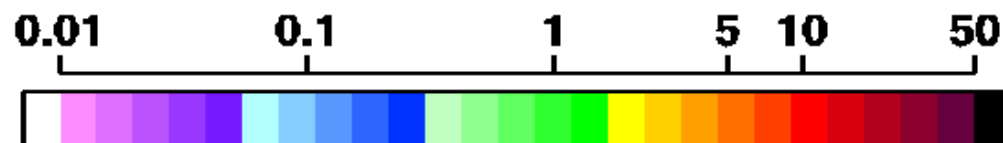
TC4

Clouds and Volcanic Outflow

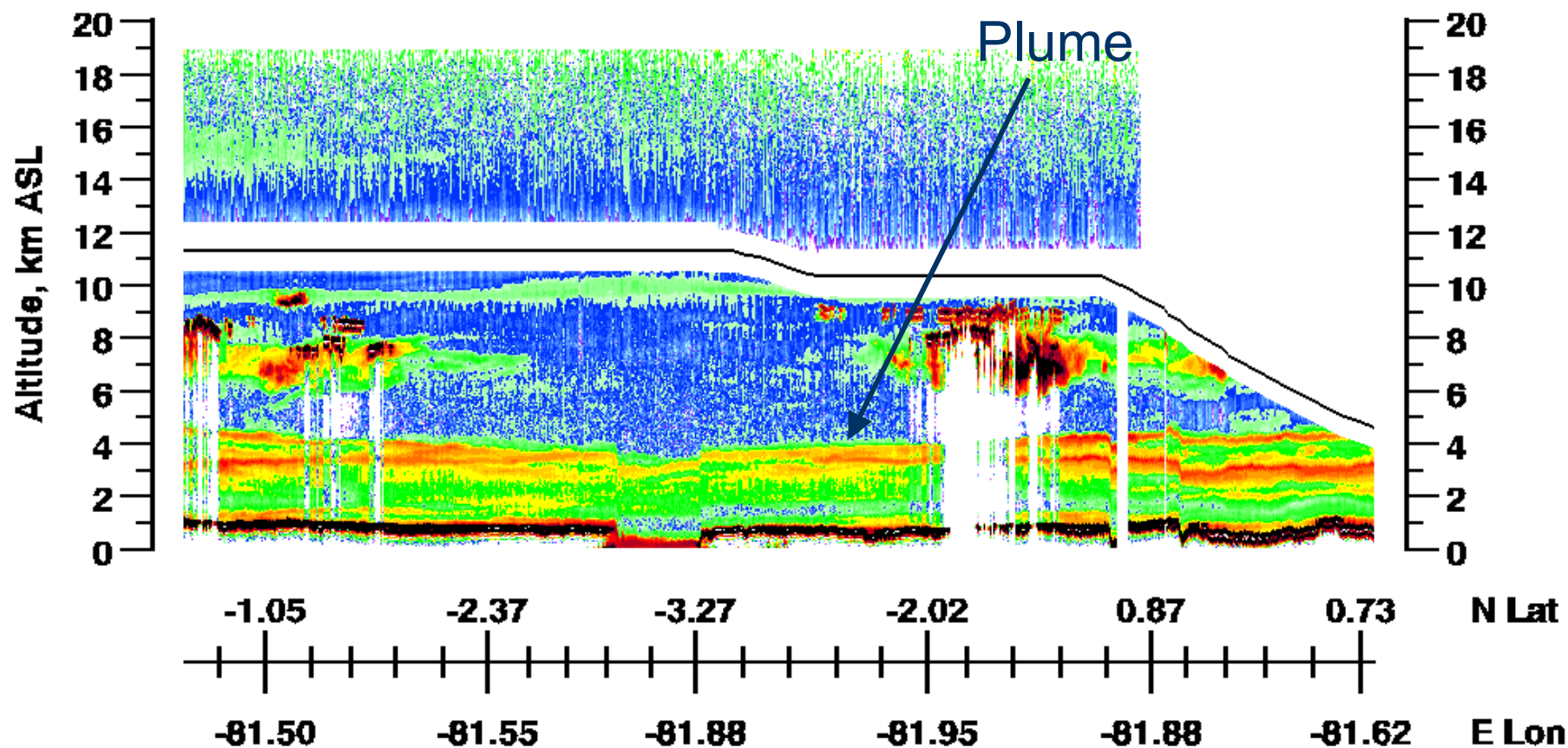
Flight 5

17 Jul 07

Aerosol Scattering Ratio (1064 nm)



16:40 16:50 17:00 17:10 17:20 17:30 UT



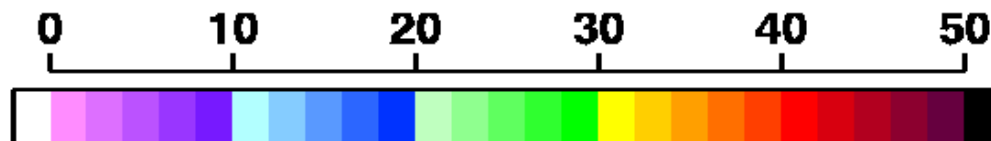
TC4

Clouds and Volcanic Outflow

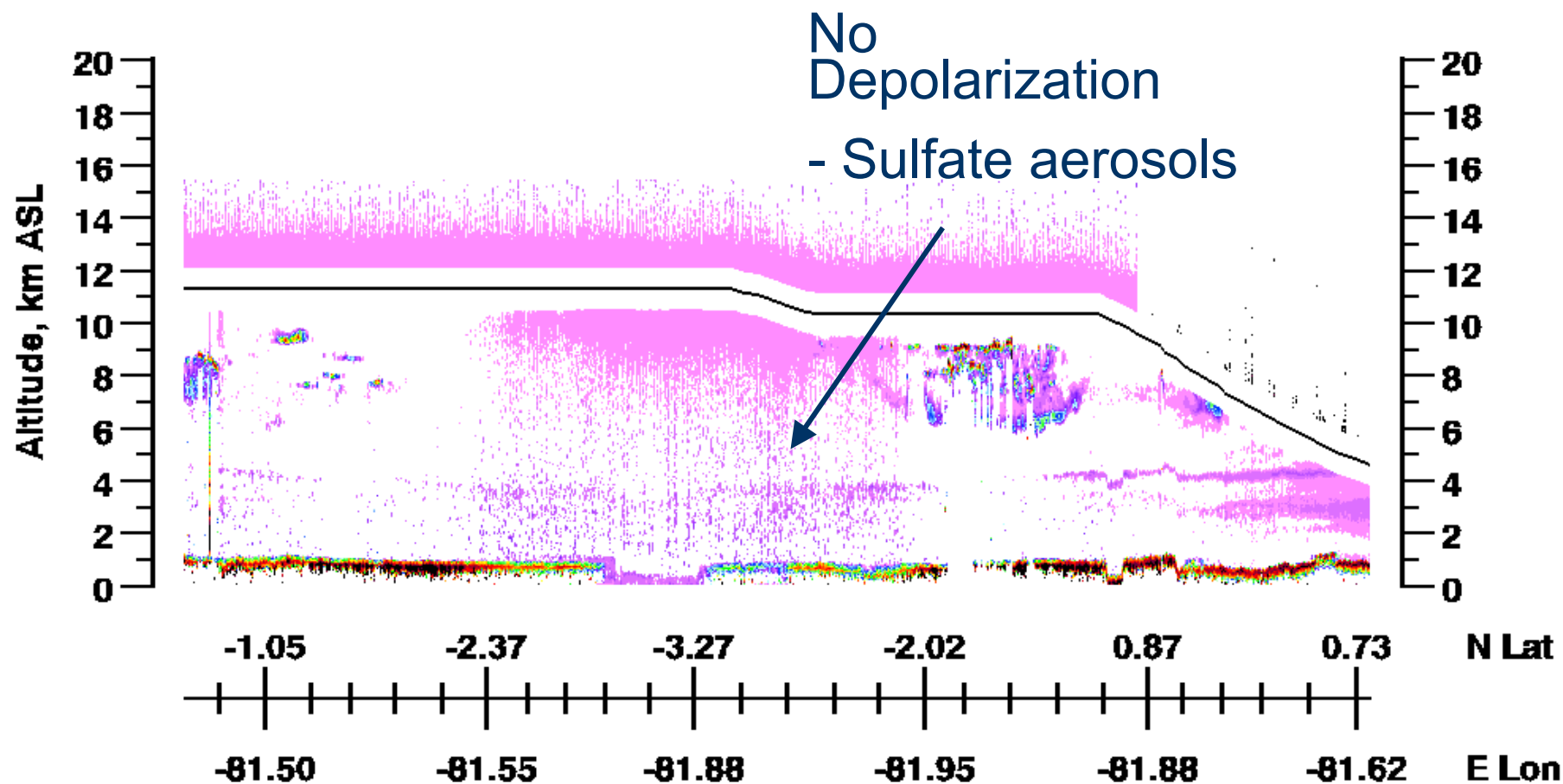
Flight 5

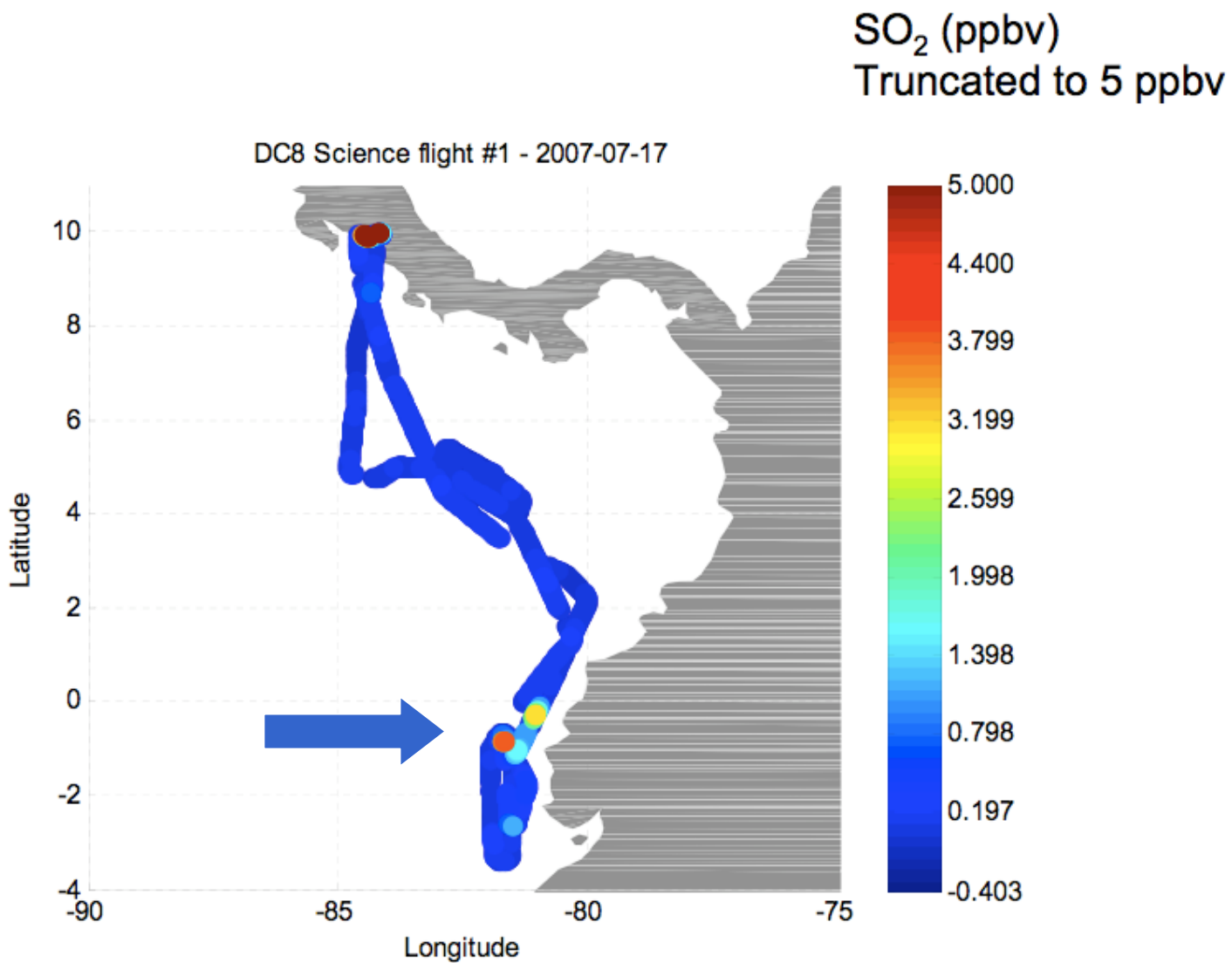
17 Jul 07

Total Depolarization %



16:40 16:50 17:00 17:10 17:20 17:30 UT



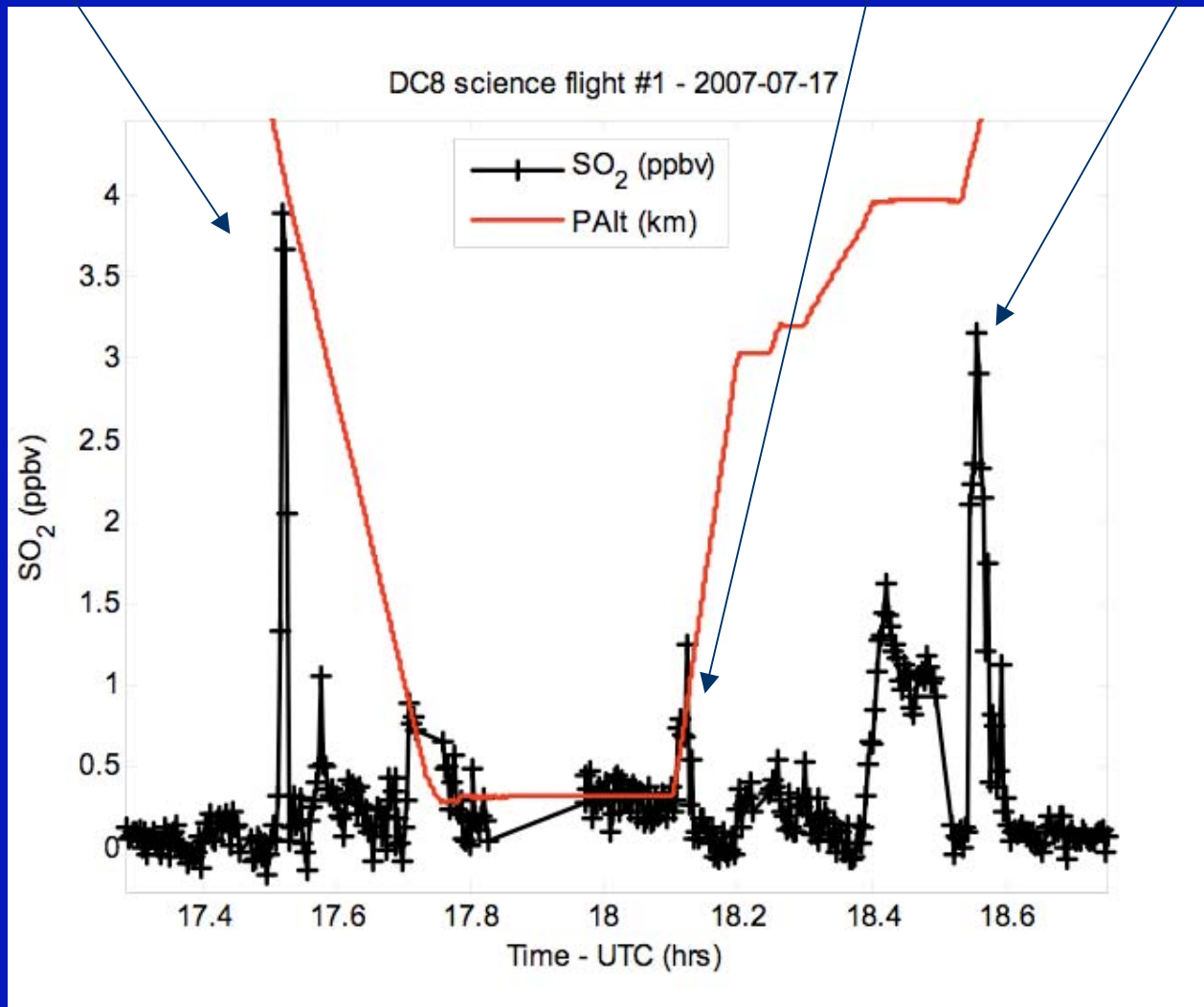


CIMS John Crounse

Plumes

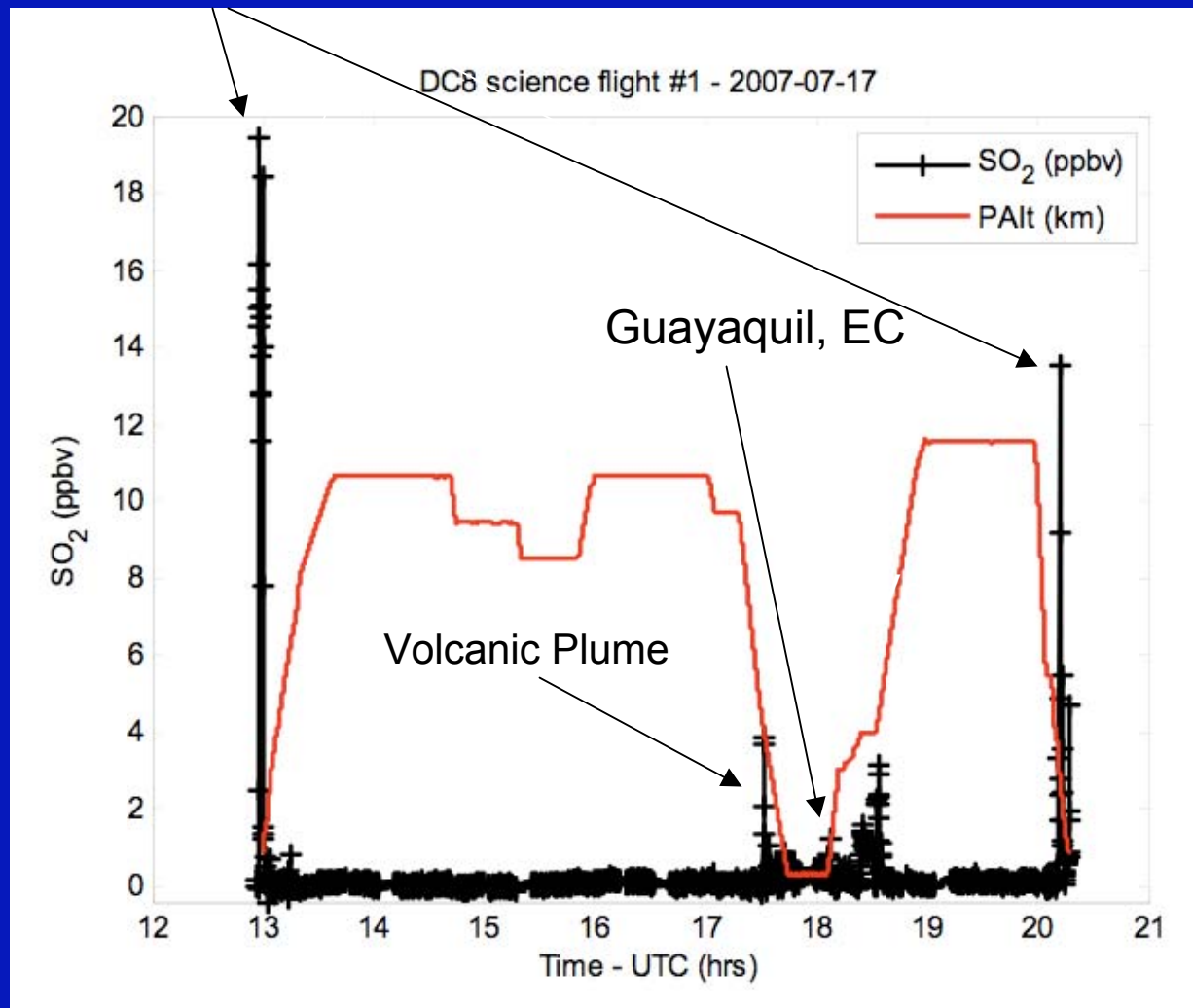
Urban SO₂

Plumes

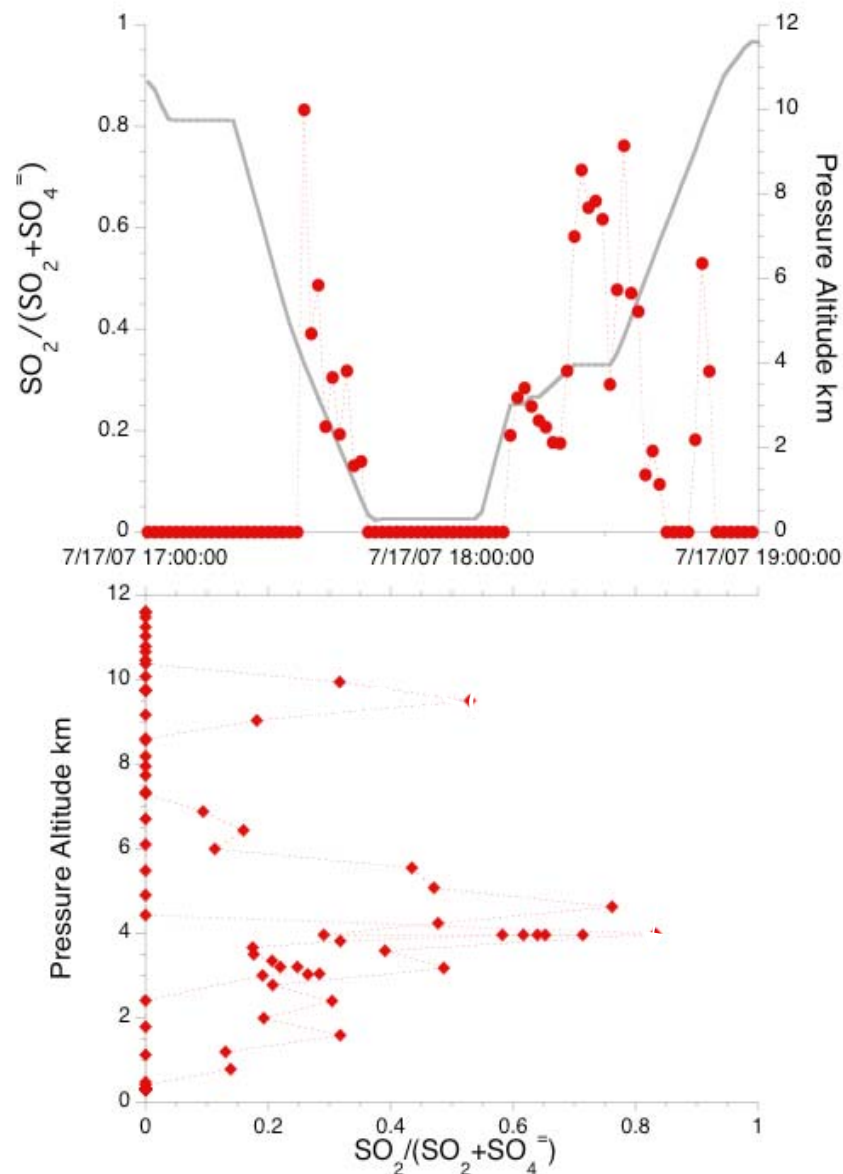
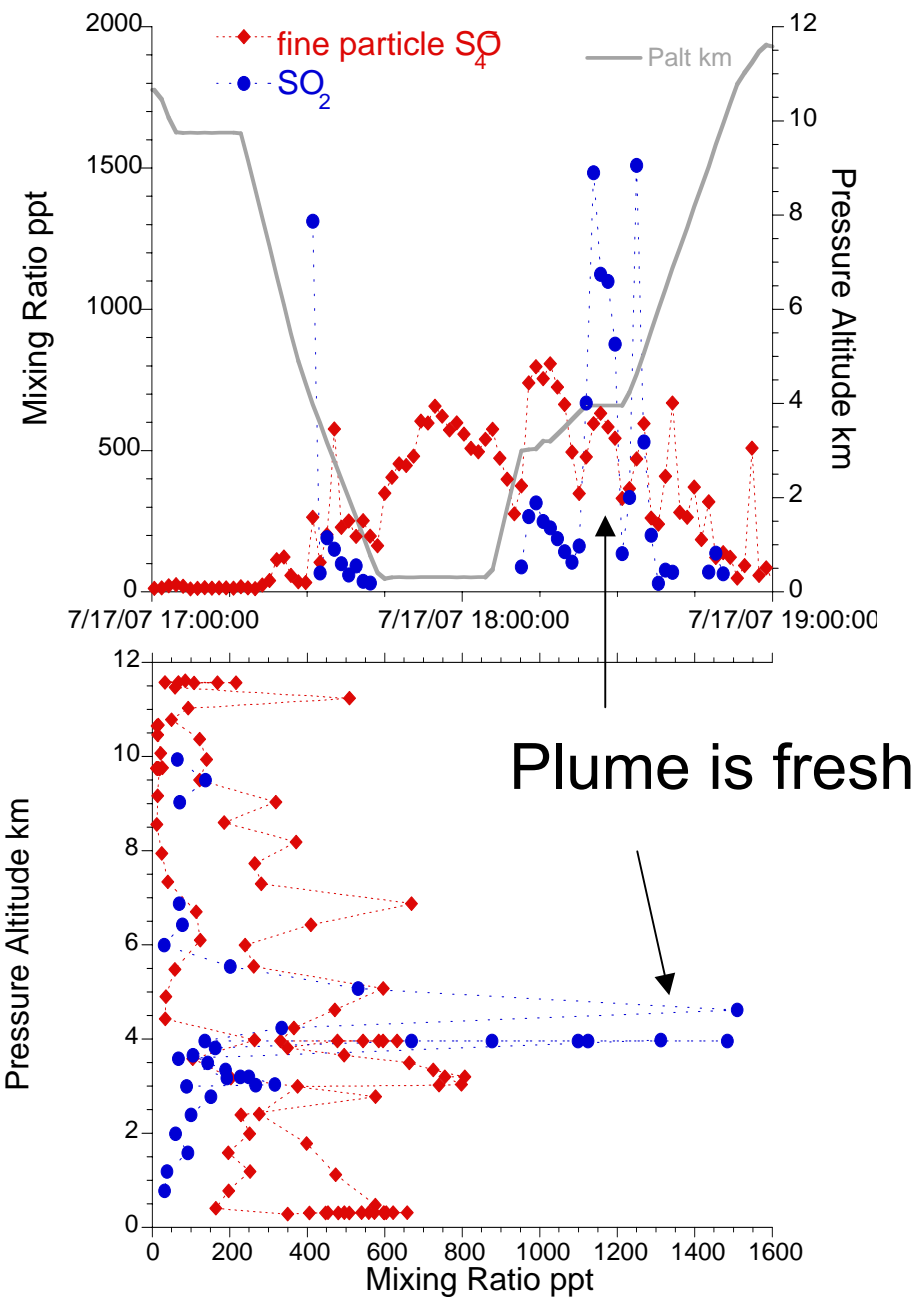


CIMS John Crounse

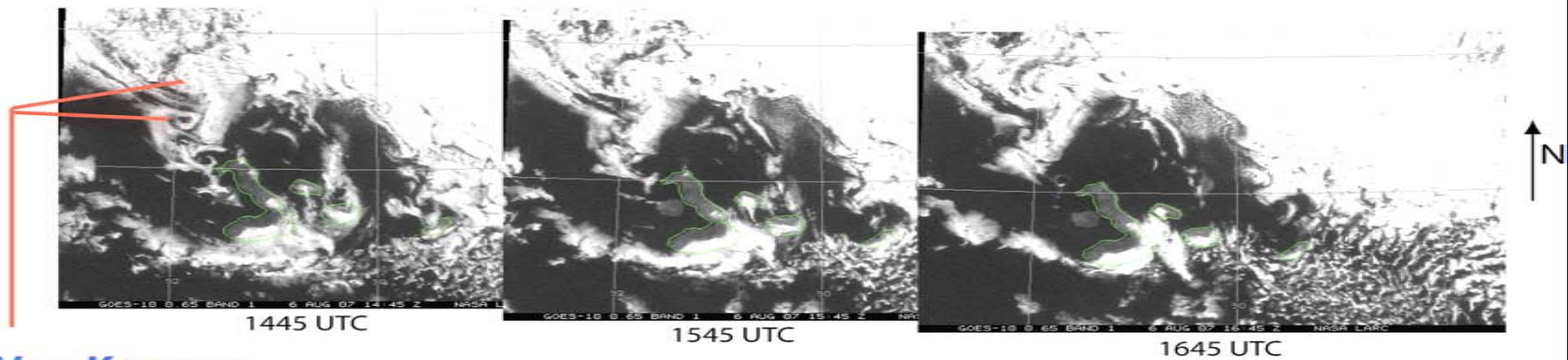
San Jose



CIMS John Crounse



GOES-10 VIS Satellite Imagery (~1 km spatial resolution)

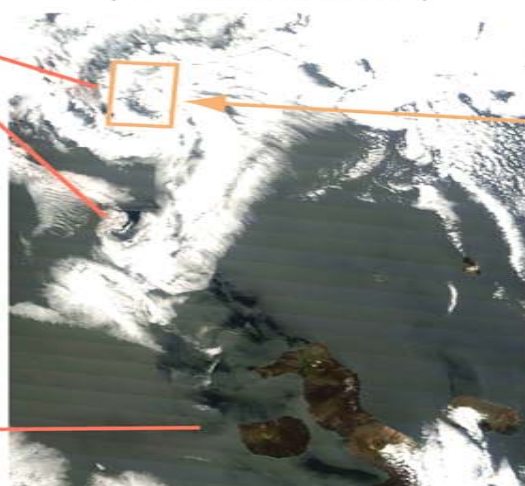


**Von Karman
Vortices**

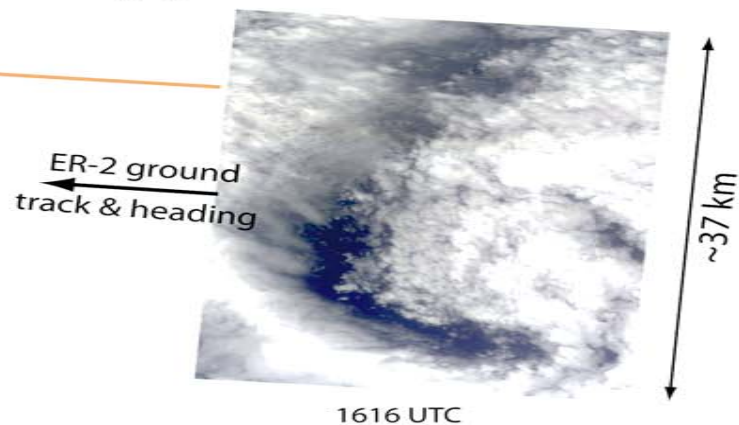
MODIS True-Color Imagery
(~250 m resolution)

MODIS-ASTER (MASTER) ER-2 True-Color
Imagery of northern vortex (~50 m resolution)

**Galapagos
Islands**



1616 UTC



Photograph of n. vortex from the DC-8



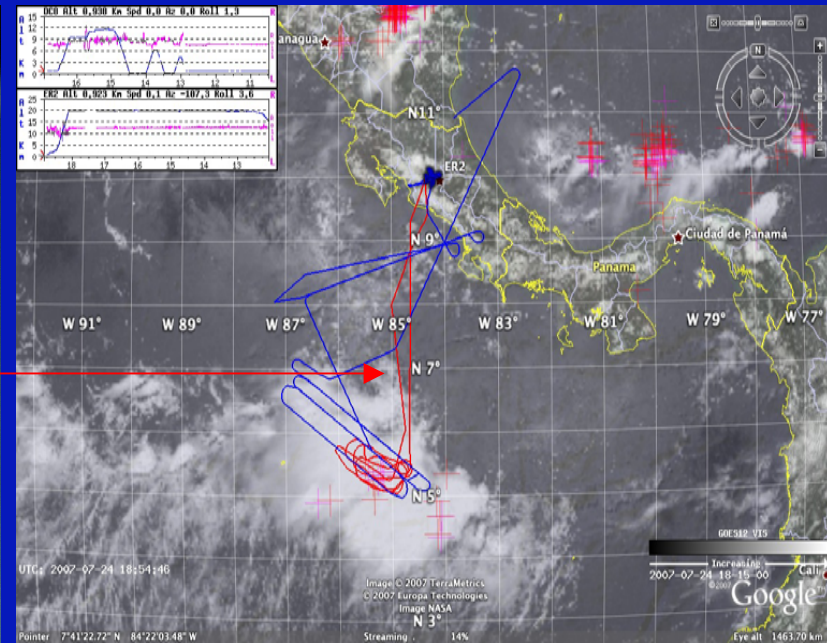
(courtesy M. Schoeberl, GSFC)

July 24 - Zeus tries to take out the Aura Project, but fails

Lightning strikes
plane about here



(undoctored photo before strike)



Lightening Burn Hole on Tail



TC4

- Lots of good validation data despite mission problems - SO₂, NO₂, Ozone
 - Not as much TTL data as we would like
- Workshop early next year
- Thanks for Aura team for field participation and special products